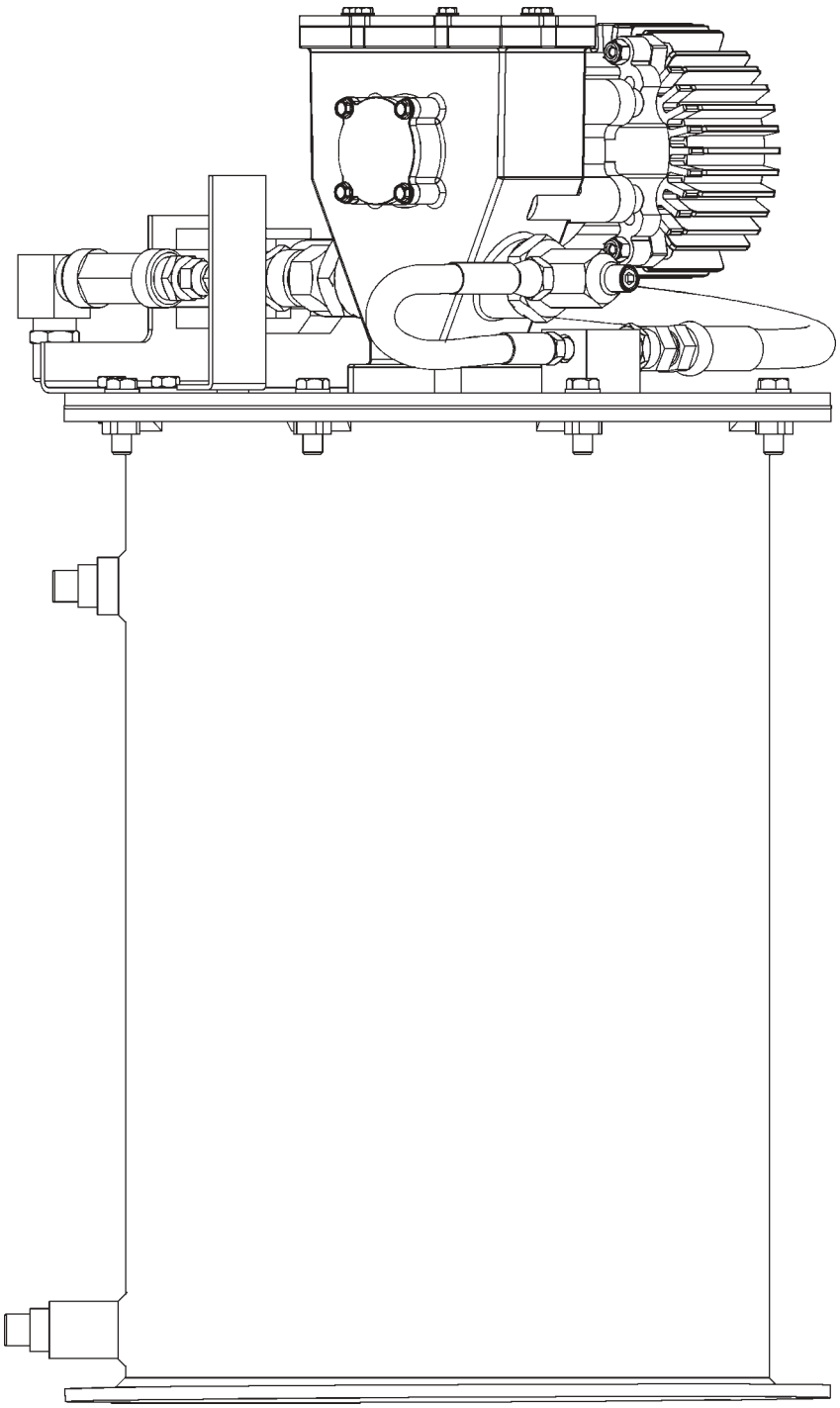
FlowMaster™ Rotary Driven Electric Pump (24 VDC)
Models 85471, 85472 & 85473
Series “A”



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SAFETY

Read and carefully observe these operating instructions before unpacking and operating the pump! The pump must be operated, maintained and repaired exclusively by persons familiar with the operating instructions. Local safety regulations regarding installation, operation and maintenance must be followed.

Operate this pump only after safety instructions and this service manual are fully understood.

⚠ WARNING

This symbol indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Please refer to the 85571 operation manual, section C8, page 279, series “A”© for all other safety considerations.

PRODUCT SPECIFICATIONS

Supply Voltage	**24 VDC**
Ambient oper. temp. ºF (ºC) -	**-40 to +150 (-40 to +66)**
Weight, Lbs (Kg) -	
- 85471	**93 (41)**
- 85472	**99 (44)**
- 85473	**102 (45)**
Container capacity , Lbs (Kg) -	
- 85471	**60 (27)**
- 85472	**90 (41)**
- 85473	**120 (54)**

⚠ WARNING

Do not exceed an outlet grease pressure of 5000 PSI. Exceeding the rated pressure may result in damage to system components and personal injury .

DESCRIPTION

General Description

The Models 85471, 85472 and 85473 are pumping units designed to operate a Centro-Matic® lubrication system. The units include a vent valve to relieve the line pressure to recharge the injectors. FlowMaster™ Rotary Driven Electric Pump includes a motor speed control and built in circuit protection to prevent control burnout.

The FlowMaster pump is fully automatic when used with Model 85530 Controller and a pressure switch. The Flow-Master pump is double acting, dispensing lubricant on both the **“Up”** and **“Down”** strokes. This unit is designed to be used with SL-1, SL-11, SL-32 and SL33 series injectors or a combination of these.

Models 85471, 85472 and 85473 all include follower plates and low level indicators.

Appropriate Use

- The pump on this unit is exclusively designed to pump and dispense lubricants using 24 VDC power.
- The maximum specification ratings should not be exceeded.
- Any other use not in accordance with instructions will result in loss of claims for warranty and liability.

SYSTEM OPERATION

Operation with Model 85530 System Controller

When Model 85530 times out, it will initiate a lube cycle. The solenoid and pump motor are energized to close the electric vent valve and start the pump. Pump begins dispensing lubricant through injectors to the bearings.

When all bearings have received lubricant, pressure rises in the system to actuate the pressure switch. When pressure switch actuates, the control is reset to de-energize the solenoid valve and motor. Pump stops, pressure vents and pressure switch de-actuates. Control begins timing toward next lube event.

INSTALLING THE PUMP

Place the unit in the approximate location making sure that electric power connections are accessible. Mark center locations of the six holes at the bottom of the reservoir. Then drill six 1/2” (13 mm) holes. The use of 7/16” (11 mm) bolts will offer some flexibility in securing the reservoir to the equipment.

Lubricant outlet of pump should be connected to system with suitable hose capable of 3,500 PSI (241 bar) working pressure.

Please refer to the 85567 operation manual, section C8, page 298, series "A" for setting the pump speed control on the 24VDC motor.

Low Level Kit (Model 85490)

Low Level Kit is recommended whenever higher viscosity greases or lower temperatures are encountered and when an external indicator of lubricant level is desired. The kit is composed of a follower with wiper and a level indicator gage located on the cover of the reservoir.

PUTTING PUMP INTO OPERATION

Filling Reservoir

- To bulk fill the reservoir, remove the lower and upper pipe plugs from the side of the reservoir (see Figure 4). Attach the appropriate bulk-filling pump to the lower inlet (3/4 NPT). Fill reservoir until grease appears at the top 1/2 NPT vent high level port. Remove the bulk-filling pump. Replace both pipe plugs.
- To use the reservoir with a five-gallon pail of lubricant (Model 85571 only), first remove the six bolts that secure the lid. Remove the entire assembly of lid, pump and vent valve. Using pipe wrench or vice grips, remove the filler nipple extension (43) (View A-A) attached inside the reservoir at the 3/4 NPT inlet nipple. Insert opened pail of lubricant and reattach lid and pump assembly.

Note: If five gallon pail lubrication is to be used (for Model 85571 only), then the optional wing screws (38) should be used in place of the hex bolt (10). Do not use follower assembly with the 5 gallon pail.

⚠ WARNING

When filling the reservoir, caution should be used as extreme pressure can cause damage to the reservoir or serious personal injury.

MAINTENANCE & REPAIR

General Maintenance

- Keep area around pump clean. Clean off filling port area prior to filling reservoir. Clean area around filler after filling as lubricants will attract dirt.
- Keep lubricants clean and free of dirt and debris.
- When replacing grease pails be especially careful to prevent any foreign matter from entering the grease pail or contaminating the grease, as it adheres to the pump.

In Case of System Malfunction (See Trouble Shooting Chart Page 8)

- Use the **Trouble Shooting Charts** to determine where to look if problems occur.
- See the sections below for replacement and repair of specific areas of the check valve, vent valve or safety unloader valve.
- Each part is identified with a number keyed to the matching part on the illustrated views.
- General recommendations of tools required are also specified in each step.
- Pay particular attention to the **Warning** statements to prevent personal injury and possible damage to pump components.

Outlet Check Service (See Figures 1, 2, 7 & 8, Pages 5 & 6)

The pump will not build up sufficient lubricant pressure if the outlet check (21) is fouled. Foreign material may lodge beneath the Check Ball (49) or between check disc (46) and the seat of bushing assembly (45). Sealing surfaces of the seat must form a perfect seal. Clean parts or replace if pitted, worn or scored.

1. Turn off and disconnect the electric power supply to the pump assembly.
2. Standard tools required are a bench mounted vice, a set of open end wrenches ranging from 7/16" to 1-1/2", a large 24" (600 mm) adjustable wrench and a smaller 10" (254 mm) adjustable wrench.
3. Remove bolts, nuts and lock washers (25, 26 & 27).
4. Loosen adapter union (20). Set vent valve assembly to the side.
5. Remove entire outlet check assembly (21) by loosening adapter (22) from pump outlet.
6. Remove adapter (22) from outlet check assembly (21).
7. Remove outlet connector (50) from bushing (45).
8. Remove ball check seat (47) from outlet connector (50).
9. Inspect all check components (46, 45, 47 & 49) for presence of foreign material, scoring and or other damage, which may cause internal leakage. Replace components if damage is found.
10. If foreign material is present, clean components and reassemble. Be sure to always replace gaskets (44) & (48) whenever vent valve is disassembled. Reverse the above procedure to reassemble. Torque check assembly to 100 ft.-lbs. (13.5 N-M).

Follower (see Figures 4, 5 & 6 Page 5)

If follower wiper appears to be damaged or does not wipe the sides of the container effectively service may be necessary.

1. Disconnect electric supply from pump.
2. Remove the eight bolts (10) and lock washers (9) which attach the cover to the reservoir.
3. Lift the entire pump, vent valve, cover assembly and follower out of the reservoir.
4. Unscrew the low level indicator (3) from the follower plate (34).
5. Now remove the entire follower assembly from the pump tube. After removing the follower assembly from the pump tube wipe off the excess grease which will allow clean access to the eight bolts that must be removed.

6. Loosen and remove the eight nuts (53) on top of the follower.
7. Remove the follower weight and the wiper (51). Replace the wiper with a new one.
8. Reassemble in the reverse of the above procedure making sure that the long bolts are staggered with the small ones and that they extend below the follower.

Low Level Indicator (see Figure 4 & 5 Page 5)

If the indicator pin appears to drop prematurely or water is noticeable on top of the follower then the indicator seal (1) may be damaged.

1. Remove the eight bolts (10) and lockwashers (9) which hold the cover on to the reservoir.
2. Inspect the reservoir gasket seal (39) for damage. If damage is apparent then replace the gasket seal.
3. Remove the entire pump, vent valve and follower assembly from the reservoir.
4. Remove the retaining ring (82) from the indicator rod assembly (3).
5. Hold the indicator plug (4) with a wrench while removing the indicator nut (2).
6. Remove and replace the O-ring (1).
7. Reassemble in the reverse of the above procedure. Torque the indicator nut (2) to 20 ft.-lbs.

Safety Unloader Valve (See Figure 1 Page 5)

Safety unloader valve (28) is not serviceable and should be replaced if malfunction is apparent. Upon reassembly, tighten to 10 ft-lbs. (13.5 N-M).

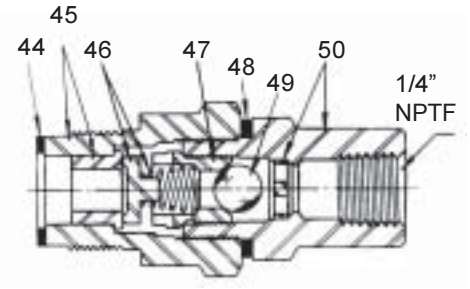
The safety unloader (28) is set to open at 3,750 to 4,250 PSI lubricant pressure. If pressure Switch fails to operate and shut off hydraulic supply to pump, the Safety Unloader will open at approximately 4,000 PSI to relieve lubricant supply line pressure (Safety Unloader is preset and cannot be adjusted.)

⚠ WARNING

Do not plug the outlet of the safety unloader. Plugging the safety unloader outlet could result in pump damage and serious personal injury.

Bare Pump Assembly (See Figure 4 Page 5)

Please refer to the Operation Manual (C8, Page 269 series) for the bare pump assembly (37).



Outlet Check Assembly (21)
Figure 2

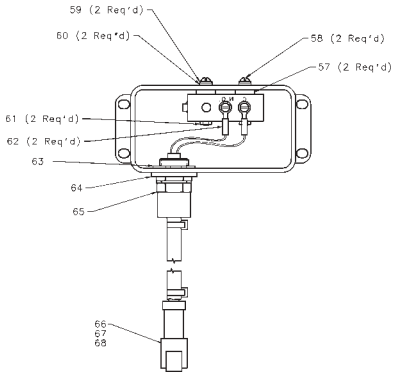


Figure 3

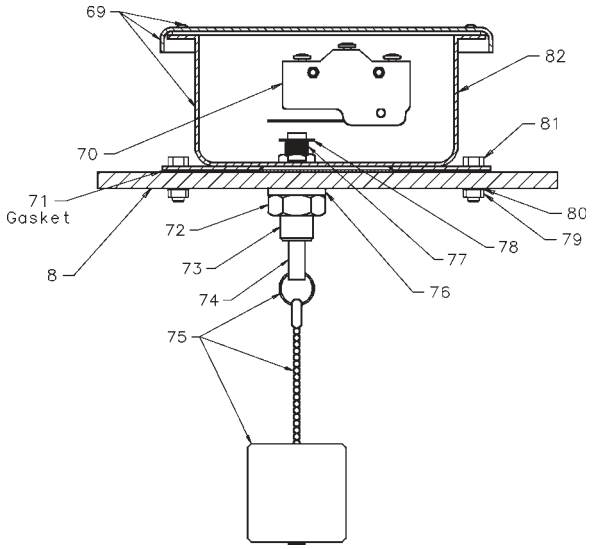
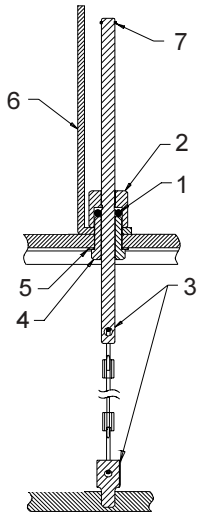
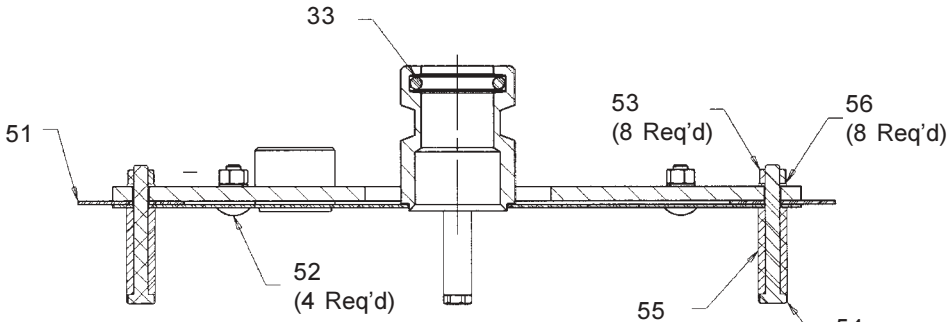


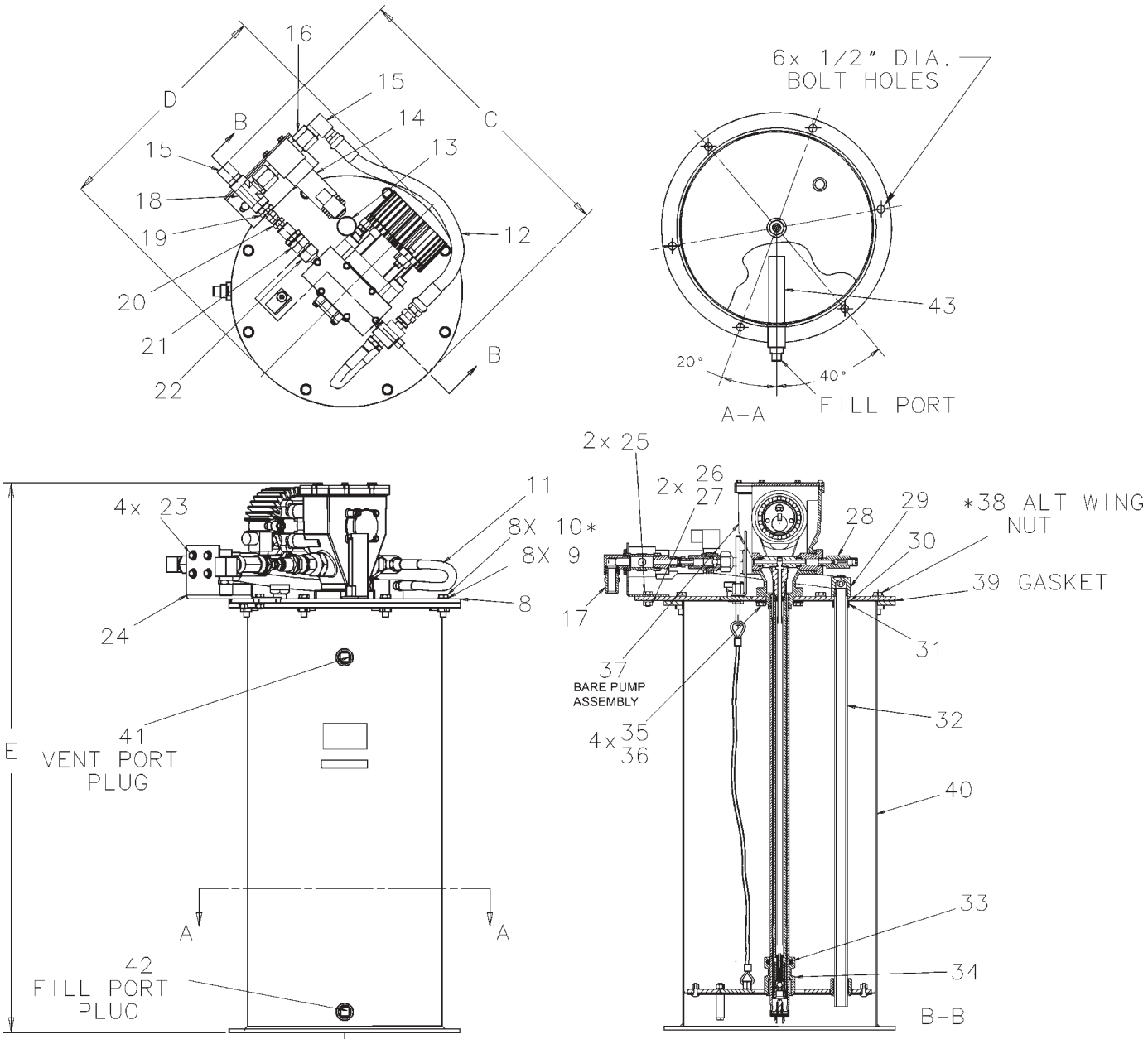
Figure 4



Low Level
Figure 5



Follower Assembly (34)
Figure 6



Part No.	C	D	E
85471	19.1" (485.1 mm)	15.12" (384 mm)	27.5" (698.5 mm)
85472	19.1" (485.1 mm)	15.12" (384 mm)	38" (965.2 mm)
85473	19.9" (505.8 mm)	16.75" (425.5 mm)	38.94" (989.1 mm)

Service Parts

Item No.	Qty.	Description	Part Number	Item No.	Qty.	Description	Part Number
1	1	O-Ring	*249532	42	1	Pipe Plug, Fill	67224
2	1	Indicator Nut	16352	43	1	Extension Tube	249356
3	1	Cable Assembly	249762	44	1	Gasket	*31029
4	1	Indicator Plug	249357	45	1	Pump Check Disc Ass'y	+*80206
5	1	Washer	48548	46	1	Outlet Check Bushing	+*90204
6	1	Indicator Bracket	361020	47	1	Ball Check Seat	*10313
7	1	Retaining Ring	*68888	48	1	Gasket	*31001
8	1	Drum Cover	241085	49	1	Steel ball (3/8" Dia.)	*66001
9	8	Lock Washer	66220	50	1	Outlet Connector	90860
10	8	Bolt	50015	51	1	Wiper (Nitrile)	*249331
11	1	Hose	272711	52	4	Carriage Bolt (Short)	249332
12	1	Vent Hose	270726	53	8	Nut	51304
13	1	Vent Fitting	249354	54	4	Bolt (Long)	50084
14	1	Electric Vent Valve	525-32083-1	55	4	Spacer	249833
15	2	Elbow	12134	56	12	Lockwasher	66186
16	2	BPT to NPT Adapter	272720	57	2	Packing	34413-15
17	1	Nipple	11197	58	2	Gasket	34748
18	1	Pipe Tee	272719	59	2	Screw	50618
19	1	Nipple	14612	60	2	Washer	48350
20	1	Adapter Union	66645	61	2	Nut	51080
21	1	Outlet Check Assembly	81938	62	2	Insulated Terminal Ring	324059
22	1	Adapter	12213	63	3	Conduit Locknut	68020
23	4	6 mm Washer Head Screw	272718	64	2	Sealing O-Ring	271911
24	1	Bracket	272716	65	3	Straight Male Cord Conn.	271656
25	2	Bolt	50016	66	1	2-Way Deutsch Plug	271651
26	2	Lock Washer	66246	67	2	Contact Pin	271655
27	2	Nut	51026	68	1	Wedge Lock	271658
28	1	Safety Unloader	272722	69	1	Conduit Box	271650
29	1	Vent Tee	272717	70	1	Micro Switch	68758
30	1	Gasket	31010	71	1	Gasket	271657
31	1	Nut	12538	72	1	Nut	51039
32	1	Vent Pipe	See Table 1	73	1	5/8 Hex Stud	271654
33	1	O-Ring	270720	74	1	Rod	14259
34	1	Follower Assembly	See Table 1	75	1	Weight Assembly	271652
35	4	Hex Screw	50169	76	1	Lock Washer	69181
36	4	Lock Washer	66186	77	1	Spring	55302
37	1	Bare Pump Assembly	272710	78	1	E-Ring	66765
38	8	Wing Screws (Not Shown)	252727	79	4	Nut	51100
39	1	Gasket	249355	80	4	Lock Washer	68991
40	1	Container Assembly	See Table 1	81	4	Screw	50088
41	1	Pipe plug, Vent	67117	82	1	Conduit Box Assembly	**272758

* Suggested service replacement component
** Used on 85473 only.
+ Sold as an assembly. Individual parts not available.

MODELS 85487 & 86258 TROUBLESHOOTING

CONDITION	POSSIBLE CAUSE	CORRECTIVE ACTION
Pump does not operate.	No electrical power to pump.	Turn on or connect24 VDC power.
	- Motor Relay Failure - Motor Overheated - Motor tripped out on locked rotor protection - Broken gearset or shaft. - Blown Fuse	Replace Relay Turn power off for 10 minutes and restart. Remove high pressure or repair cause of locked pump. Repair gearbox Replace fuse, check for cause of overload.
Pump runs excessively.	Pump tube malfunction.	Refer to pump service page.
	Outlet check damage or contamination.	Repair check or remove contamination.
	Vent valve damage or contamination.	Repair vent valve or remove contamination.
	System component leaking.	Repair leaks.
	Injector bypassing.	Repair injectors.
Pump speeds up or runs erratically.	Low level of grease or reservoir is empty.	Refill reservoir.
	Follower plate is stuck and separated from grease.	Check follower plate and container for damage.
	Pump piston or checks are worn.	Refer to pump service sheet.
Pump runs, but output is low.	Motor speed control set too low.	Turn screw to speed up motor. See pump service page.
	Faulty inlet or discharge check valve in pump.	Replace faulty components. See pump service page.
Lubricant leaking from safety unloader valve.	Pressure of system set too high.	Adjust pressure switch setting.
	Safety unloader damaged or contaminated.	Replace safety unloader.

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